

Service Manual

NATIONAL**TAPE RECORDER****PANASONIC**

4-BAND RADIO, CASSETTE TAPE RECORDER WITH SLEEP SWITCH, BUILT-IN MICROPONE



RQ-237S MECHANISM SERIES

MODEL RQ-235TS

SPECIFICATIONS

Power Source:	AC: 90~109, 110~125, 200~219, 220~250 volts; 50/60Hz Batteries: 9 volts (six "D" size dry batteries) Car battery (12 volts): optional car battery adaptor RP-916	Track System:	2-track monaural recording and playback
Power Consumption:	6 W	Inputs:	MIC: -70 dB (0.3 mV)/3.3 K Ω AUX IN: -23 dB (70 mV)/100 K Ω
Motor:	Mechanical governor motor	Outputs:	EXT SP: 8 Ω REMOTE: for start and stop from a distance
Transistors:	2SC920(3) 2SB346(1) 2SB175(3) 2SB324(3) 2SC828(1)	Speaker:	One 4" (100 mm) PM dynamic speaker
Diodes:	OA90Z(3) EYV320DIR2J3(1) 1S1211(2) 10DC1R(1)	Dimensions:	11-7/8" (W) \times 12-1/8" (H) \times 4" (D)
Power Output:	2W RMS (max.)	Weight:	Approx. 8-3/8 lbs.
Frequency Response:	50~10,000 Hz	RADIO SECTION	
Recording System:	AC bias, AC erase	Radio Frequency	
Operation:	Push button controls with Auto-Stop mechanism	Range:	MW: 525~1.605 kHz SW1: 1.6~4.5 MHz SW2: 4.5~12 MHz SW3: 12~26.1 MHz
Tape Speed:	1-7/8 ips.	Radio Usable	
Program Time:	1 hour with C-60 cassette tape	Sensitivity:	MW, SW1: 50 μ V/m/50 mW SW2, SW3: 6 μ V/50 mW
Fast Forward and Rewind Time:	Approx. 90 seconds with C-60 cassette tape		

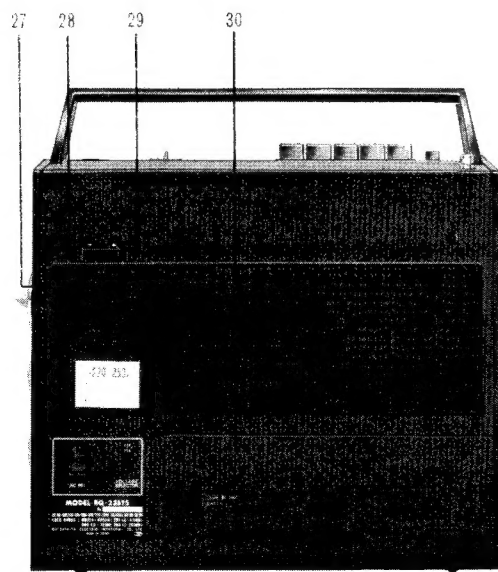
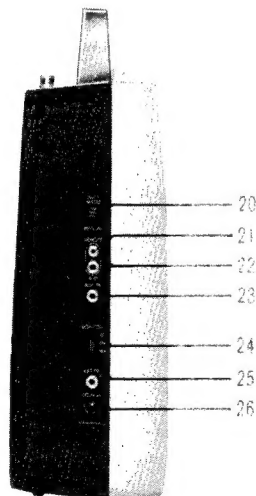
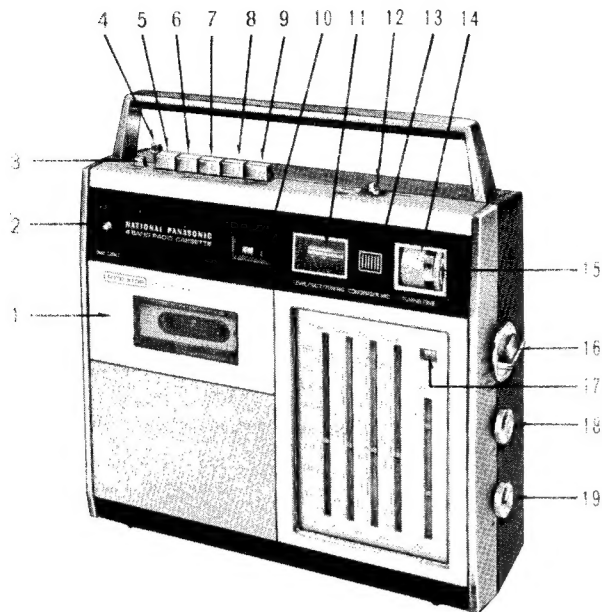
These specifications are subject to change in order to accommodate improvement in design.

MATSUSHITA ELECTRIC
MATSUSHITA ELECTRIC TRADING CO., LTD.

P. O. Box 288 Central, Osaka, Japan



LOCATION OF PARTS

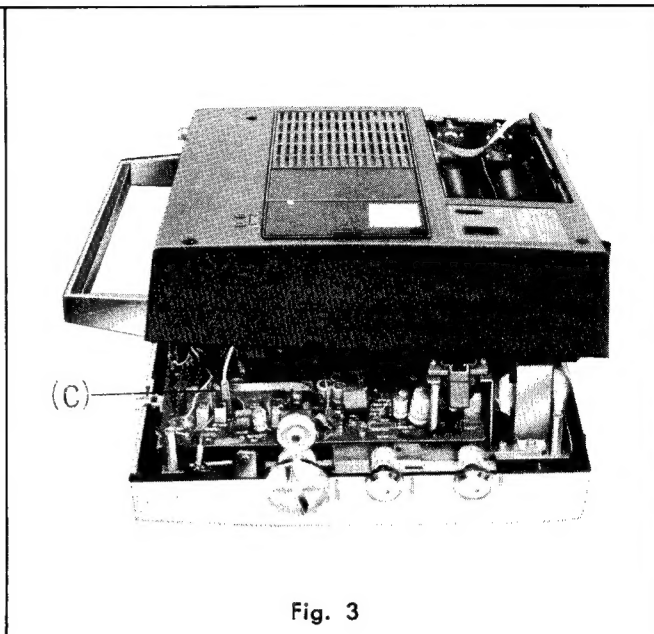
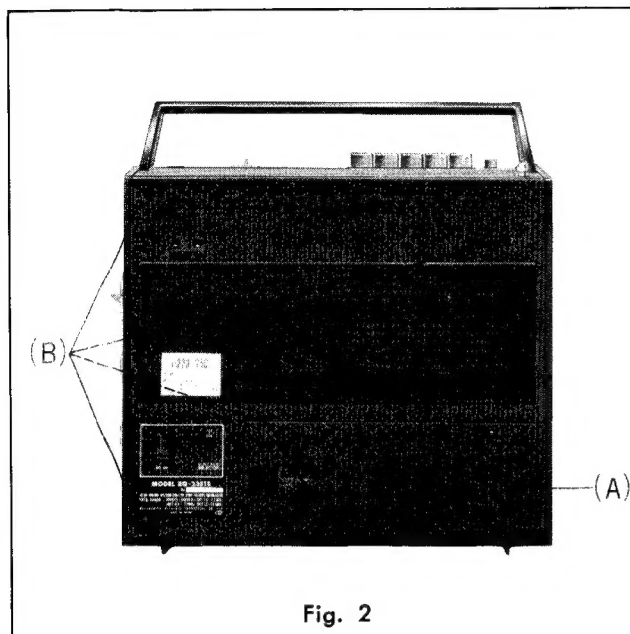


- ① Cassette holder
- ② Dial light button
- ③ Cassette ejection button
- ④ Antenna
- ⑤ Stop button
- ⑥ Playback button
- ⑦ Fast forward button
- ⑧ Rewind button
- ⑨ Record button
- ⑩ Tape counter
- ⑪ Level meter
- ⑫ Radio/tape selector
- ⑬ Built-in microphone
- ⑭ Tuning knob
- ⑮ Fine tuning control
- ⑯ Band selector
- ⑰ Band indicator
- ⑱ Volume control
- ⑲ Tone control
- ⑳ Easy-matic switch
- ㉑ Remote jack
- ㉒ Microphone jack
- ㉓ Auxiliary input jack
- ㉔ Monitor switch
- ㉕ External speaker jack
- ㉖ Car battery input jack
- ㉗ Storage compartment for accessories
- ㉘ External antenna jack
- ㉙ Earth jack
- ㉚ Battery compartment

Fig. 1

DISASSEMBLY INSTRUCTIONS

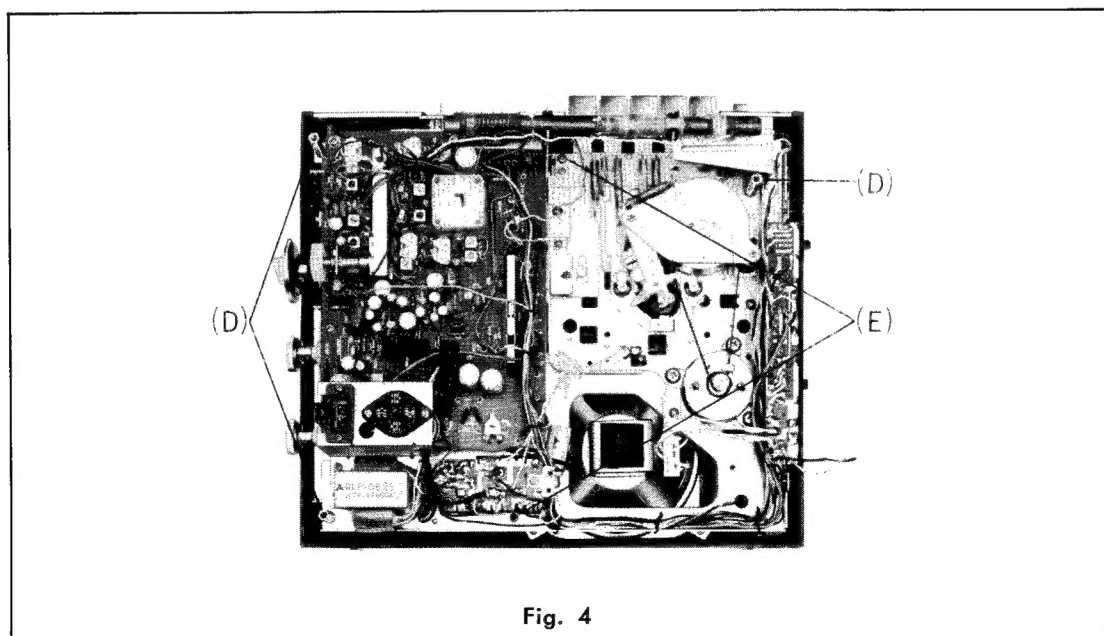
HOW TO REMOVE BOTTOM CASE



1. Remove the battery cover (A).
2. Remove 4 bottom case holding screws (B).

3. Pull out the antenna lead wire (C).
4. Then bottom case can be removed.

HOW TO REMOVE CHASSIS



1. Remove 3 chassis holding poles (D) and 2 chassis holding screws (E).
2. Then chassis can be removed.

NOTE:

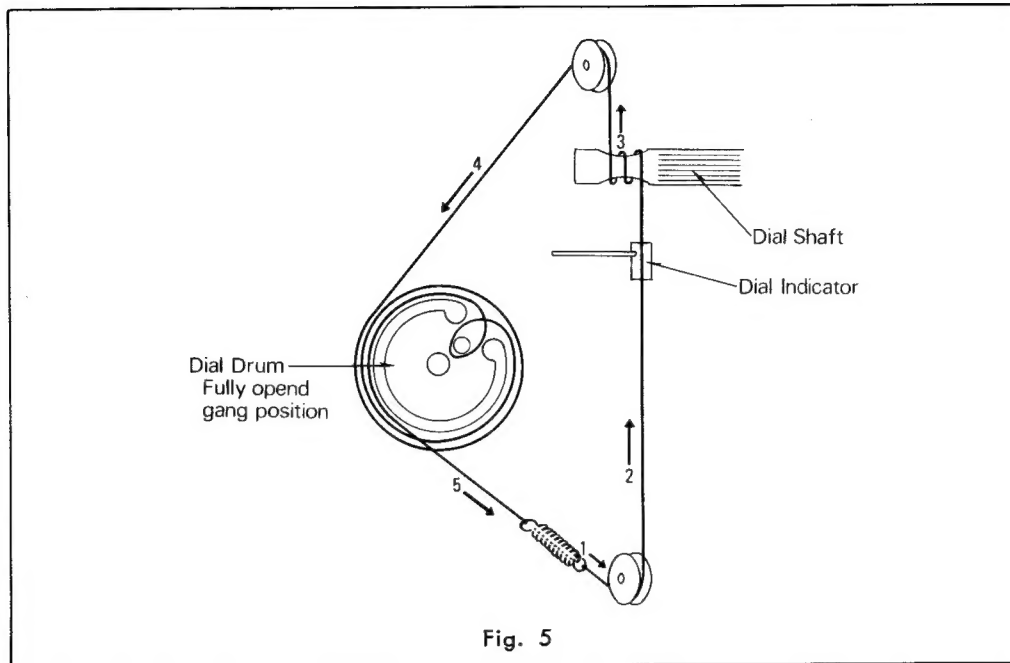
Take out the chassis slowly and with care because of the condenser microphone and dial light lead wire connected with it.

STANDARD VALUE TO TEST

	ITEM	VALUE	PARTS TO BE ADJUSTED	REMARKS
1	Recording bias current.	0.45 ± 0.05 mA	VR3	Set volume control to minimum.
2	Input level.	MIC: 1 kHz - 73 ± 3 dB AUX: 1 kHz - 27 ± 3 dB	—	To obtain $50\mu\text{A}$ of recording current through the head. Set volume control to maximum. Stop the bias oscillation by unsoldering at point A show in printed circuit view on page 9.
3	Bias oscillation frequency.	35 ± 3 kHz	—	—
4	Erase current.	55 mA	—	—
5	Takeup tension.	55 ± 15 gr-cm	—	—
6	Pressure of pressure roller.	400 ± 50 gr-cm	—	—
7	Tension of detect piece.	40~15 gr	—	—

ALIGNMENT INSTRUCTIONS OF RADIO

DIAL THREADING



AM IF & RF ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading.
 Set volume control to maximum. Set band selector to AM.
 Set tone control to high.
 Set power source voltage to 9 volts DC.

SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. 400 Hz	Point of non-interference. (on/about 600 kHz)	Speaker output	T1 (1st IFT) T2 (2nd IFT) T3 (3rd IFT)	Adjust for maximum output.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	550 kHz 30% Mod. 400 Hz	550 kHz	Speaker output	L6 (OSC coil) L1 (ANT coil)	Adjust for maximum output by sliding coil (L1) along ferrite core.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	1500 kHz 30% Mod. 400 Hz	1500 kHz	Speaker output	C19 (OSC trimmer) C3 (ANT trimmer)	Adjust for maximum output. Repeat steps (2) and (3).

Note: Cement antenna bobbin with wax after completing alignment.

SW1 RF ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading. Set volume control to maximum. Set tone control to high. Set band selector to SW1. Set power source voltage to 9 volts DC.					
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
Fashion loop of several turns of wire and radiate signal into loop of receiver.	1.6 MHz 30% Mod. 400 Hz	1.6 MHz	Speaker output	L7 (OSC coil)	Adjust for maximum output.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	4.5 MHz 30% Mod. 400 Hz	4.5 MHz	Speaker output	C22 (OSC trimmer)	Adjust for maximum output.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	1.6 MHz 30% Mod. 400 Hz	1.6 MHz	Speaker output	L2 (ANT coil)	Adjust for maximum output by sliding coil (L2) along ferrite core.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	4.5 MHz 30% Mod. 400 Hz	4.5 MHz	Speaker output	C5 (ANT trimmer)	Adjust for maximum output.

Note: Cement antenna bobbin with wax after completing alignment.

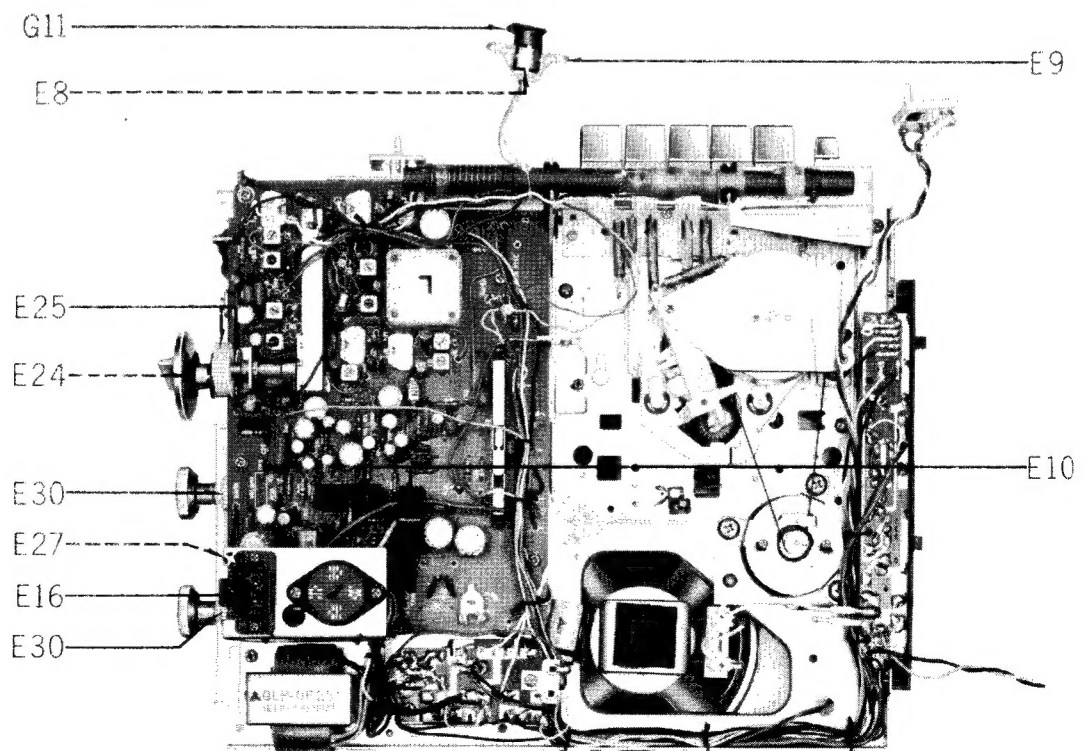
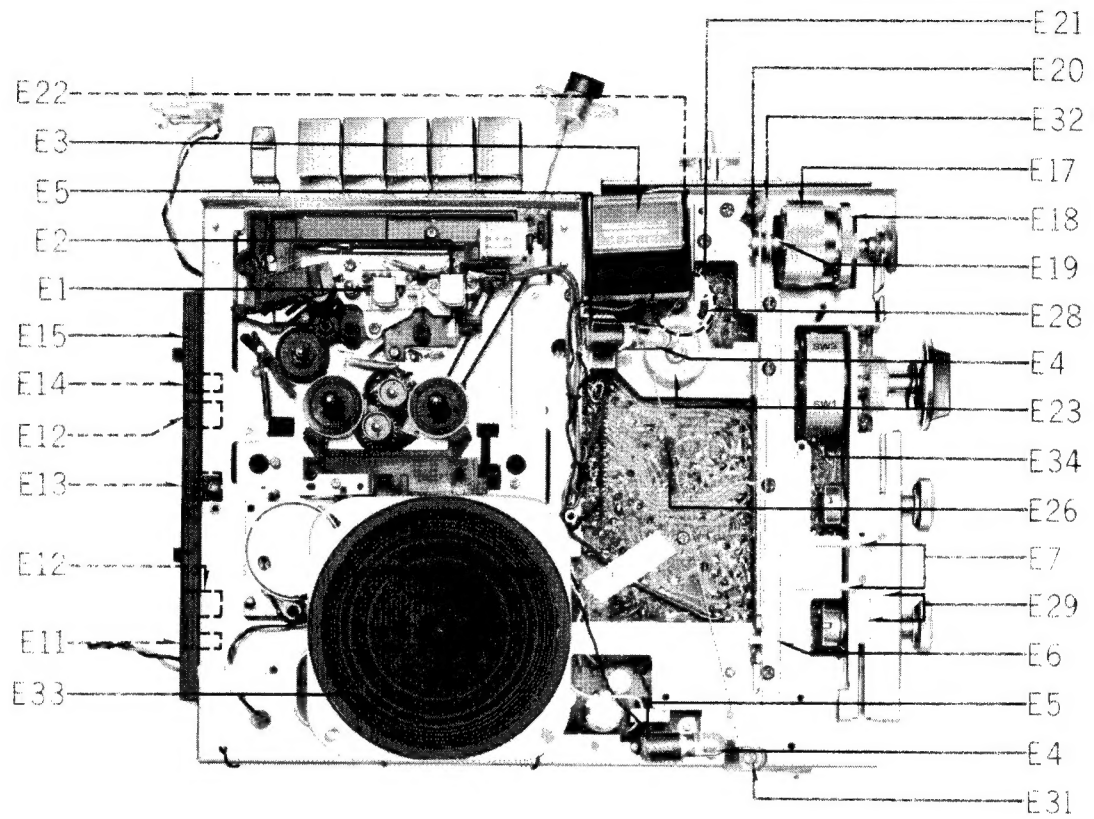
SW2 RF ALIGNMENT

Output of signal generator should be no higher than necessary to obtain an output reading. Set volume control to maximum. Set tone control to high. Set band selector to SW2. Set power source voltage to 9 volts DC.					
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUSTMENT	REMARKS
Fashion loop of several turns of wire and radiate signal into loop of receiver.	5 MHz 30% Mod. 400 Hz	5 MHz	Speaker output	L8 (OSC coil) L3 (ANT coil)	Adjust for maximum output.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	11 MHz 30% Mod. 400 Hz	11 MHz	Speaker output	C25 (OSC trimmer)	Adjust for maximum output.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	11 MHz 30% Mod. 400 Hz	11 MHz	Speaker output	C10 (ANT trimmer)	Adjust for maximum output.

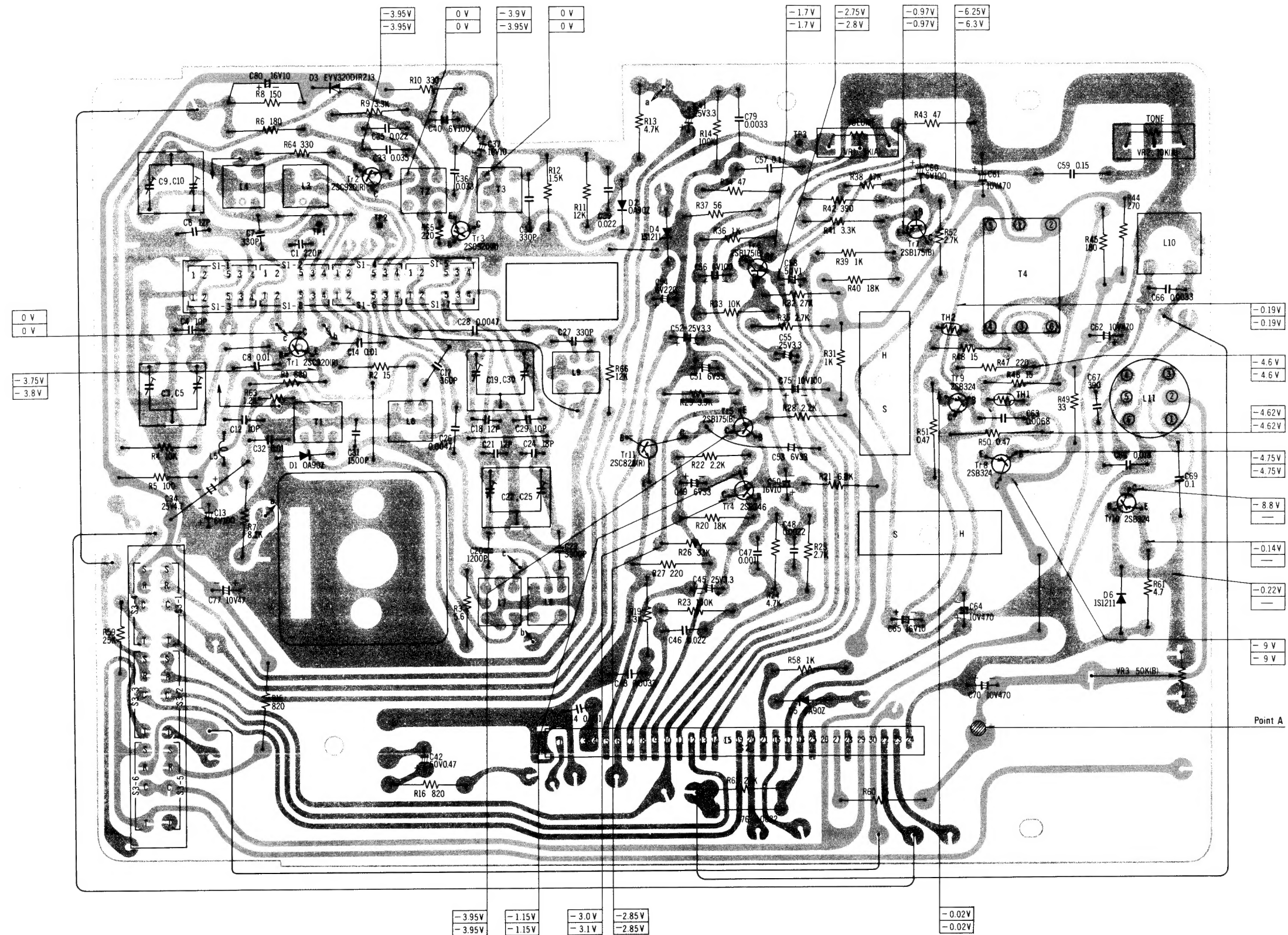
SW3 RF ALIGNMENT

Output of signal generator should be on higher than necessary to obtain an output reading. Set volume control to maximum. Set tone control to high. Set band selector to SW3. Set power source voltage to 9 volts DC.					
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
Fashion loop of several turns of wire and radiate signal into loop of receiver.	12 MHz 30% Mod. 400 Hz	12 MHz	Speaker output	L9 (OSC coil) L4 (ANT coil)	Adjust for maximum output.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	25 MHz 30% Mod. 400 Hz	25 MHz	Speaker output	C30 (OSC trimmer)	Adjust for maximum output.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	25 MHz 30% Mod. 400 Hz	25 MHz	Speaker output	C9 (ANT trimmer)	Adjust for maximum output.

ELECTRICAL PARTS LOCATION



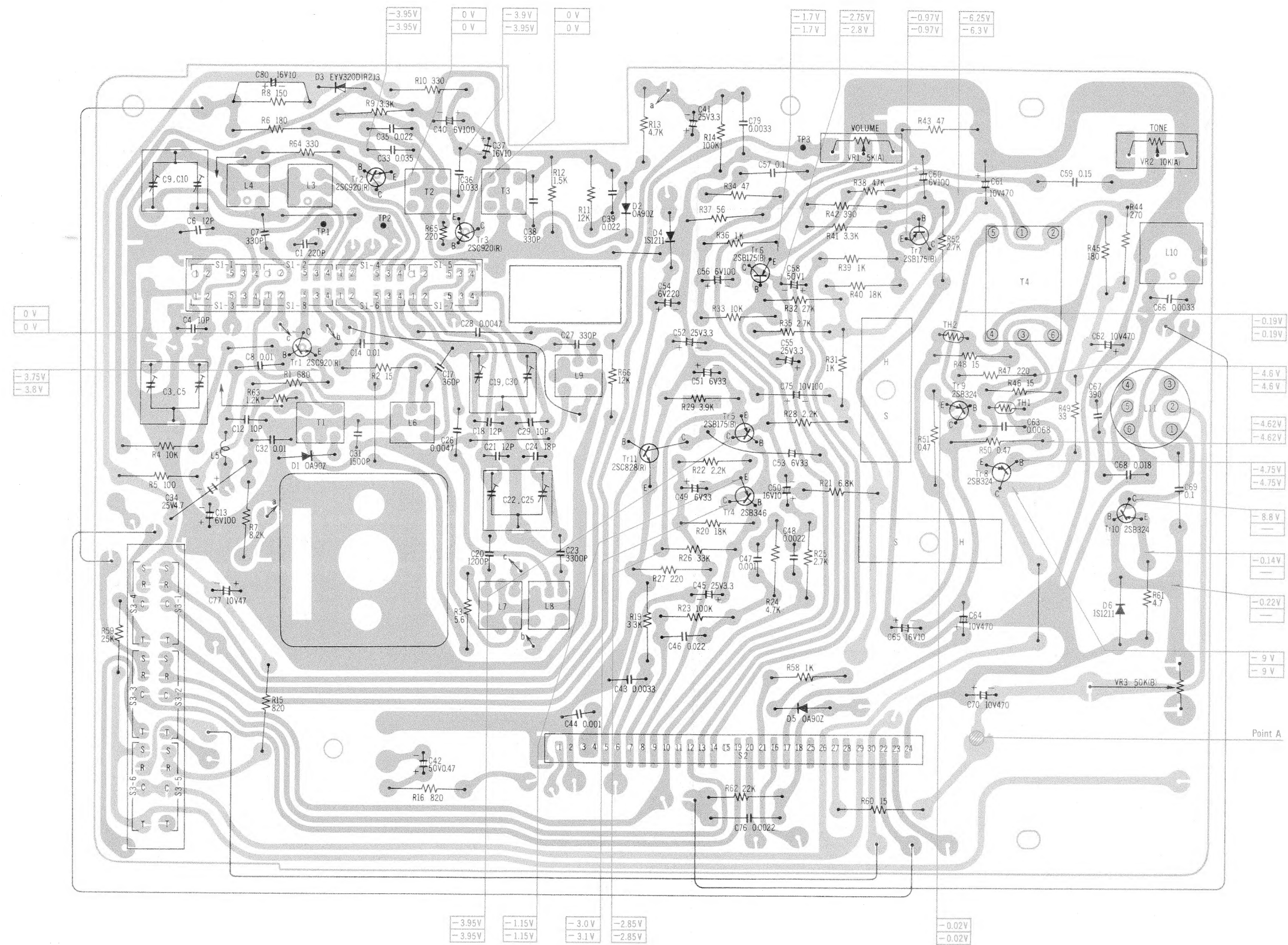
CIRCUIT BOARD



NOTE:

The circuit shown in red on the conductor is - B circuit.
Values indicated in are DC voltages between the chassis and electrical parts.
The upper values should be measured during recording and the lower values during playback.

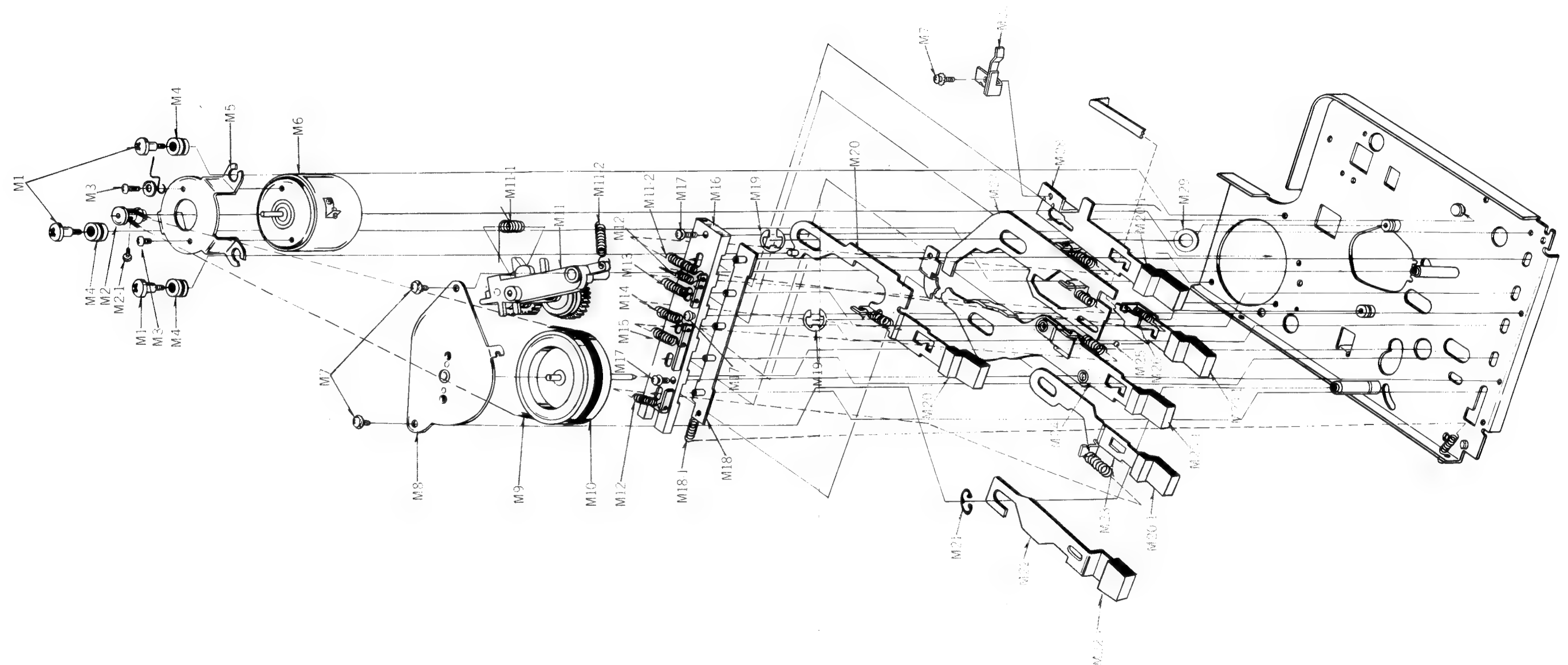
CIRCUIT BOARD

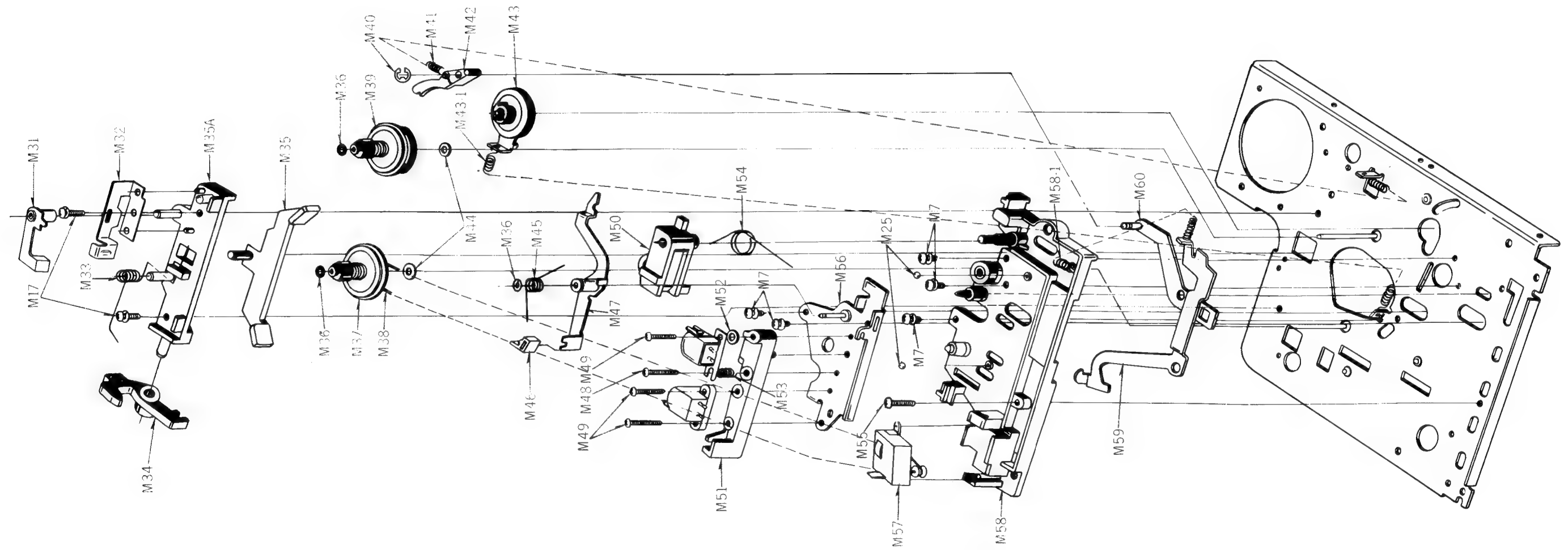


NOTE:

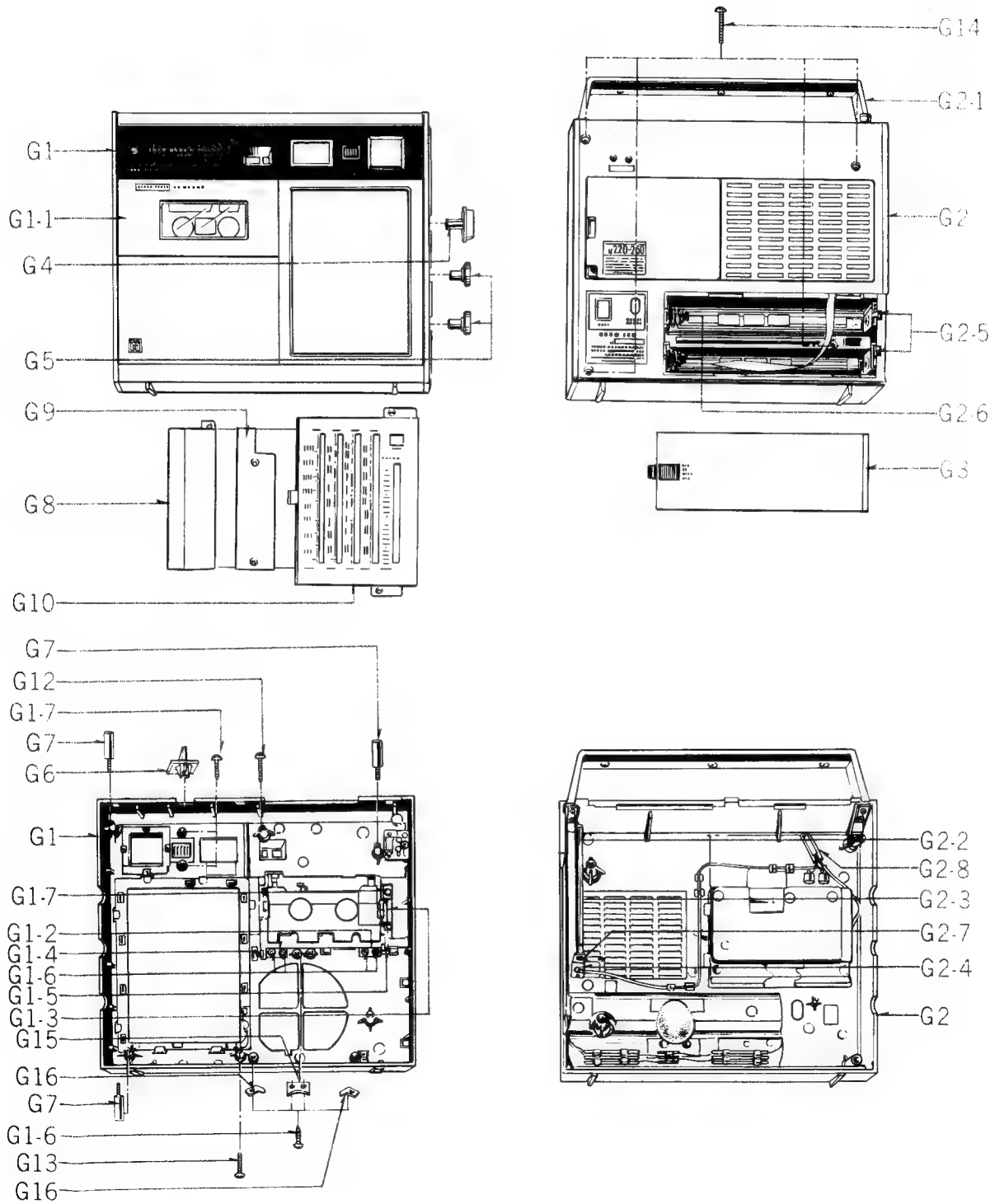
The circuit shown in red on the conductor is —B circuit.
Values indicated in are DC voltages between the chassis and electrical parts.
The upper values should be measured during recording and the lower values during playback.

EXPLODED VIEWS





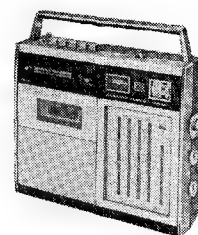
CABINET PARTS



REPLACEMENT PARTS LIST

MODEL RQ-235TS

NATIONAL PANASONIC



RQ-235TS

NOTE:

1. Be sure to make your orders of Replacement Parts according to this List.
2. "X" in "Rank" Column indicates that the part are not supplyable.
3. "A, B and C" in "Rank" Column indicates the recommended stock of replacement parts. Refer to the recommended stock table on last page.
4. "★" in "Remarks" Column indicates New Parts.
5. "ISO" in "Remarks" Column indicates ISO Screw or Nut.

NOTA:

1. Habrá que asegurarse que los pedidos de piezas de repuesto se hagan según esta lista.
2. "X" marcado en la columna "Rank", quiere decir que dichas piezas no pueden ser provistas.
3. "A, B y C" marcadas en la columna "Rank" indican el surtido que se recomienda tener de dichas piezas de repuesto.
4. "★" marcado en la columna "Remarks", quiere decir que las piezas son nuevas.
5. "ISO" marcado en la columna "Remarks", quiere decir que es un tornillo o tuerca "ISO".

NOTE:

1. Bien s'assurer de se conformer à la liste suivante pour les commandes de pièces de rechange.
2. "X", dans la colonne "Rank", indique qu'il n'est pas possible de fournir ces pièces.
3. "A, B et C", dans la colonne "Rank", indiquent le stock recommandé de pièces de rechange. Se reporter en dernière page au tableau des stocks/recommandés.
4. "★", dans la colonne "Remarks", indique les pièces nouvelles.
5. "ISO", dans la colonne "Remarks", indique une vis ou un écrou ISO.

HINWEIS:

1. Bestellen Sie Ihre Ersatzteile genau nach dieser Liste.
2. Mit "X" in der "Rank" Spalte aufgeführte Teile können nicht geliefert werden.
3. "A, B und C" in der "Rank" Spalte zeigt Ihnen den Vorrat der Ersatzteile an.
4. "★" in der "Remarks" Spalte bedeutet "neue Teile".
5. "ISO" in der "Remarks" Spalte bedeutet ISO-Schraube oder Mutter.

按:

1. 關於代用零件之訂購，務請依照此表而行之為荷。
2. 「等級」(Rank) 一欄中之 "X" 標記表示該零件無從供應。
3. 「等級」(Rank) 一欄中之 "A, B, C" 標記表示該零件有存貨，值得介紹。
請參照最後一頁的「值得介紹存貨表」。
4. 「備考」(Remarks) 一欄中之 "★" 形符號標記表示該零件為新出品。
5. 「備考」(Remarks) 一欄中之 "ISO" 符號標記表示國際標準化機構 (ISO) 式螺絲或螺母。

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
		<u>MECHANICAL PARTS</u>					
C	M1	Motor Holding Screw	QMS1833	3			RQ-237S, RS-281S
B	M2	Motor Pulley Assembly	QXP0347	1			RQ-237S
B	M2-1	Motor Pulley Set Screw	XXA2A3	1			COMMON
C	M3	Screw $\oplus M2.6 \times 3$	XSN26+3	2			"
C	M4	Motor Cushion	QBG1055A	3			RQ-237S, RS-281S
X	M5	Motor Angle	QMA1681	1			RS-281S
A	M6	Motor	QDM0981	1			★
C	M7	Screw $\oplus M2.6 \times 6$	XYN26+C6	8			COMMON
X	M8	Flywheel Retainer Assembly	QXH0095	1			RQ-237S, RS-281S
A	M9	Flywheel Belt	QDB0141	1			"
A	M10	Flywheel Unit	QXF0063	1			RQ-237S, RS-281S
C	M11	Fast wind Frame Assembly	QXL0451	1			"
C	M11-1	Fast wind Gear Spring	QBN1196	1			"
C	M11-2	Fast wind Frame Spring	QBTk0011	2			★
C	M12	Stop, Rewind Lever Spring	QBT1482	2			RQ-237S, RS-281S
C	M13	Fast Forward Lever-B Spring	QBT1485M	1			RQ-237S, RS-281S
C	M14	Fast Forward Lever-A Spring	QBT1484M	1			"
C	M15	Playback Lever Spring	QBT1536M	1			"
C	M16	Lever Guide	QBJ1657	1			"
C	M17	Screw $\oplus M2.6 \times 10$	XYN26+C10	5			COMMON
X	M18	Lock Lever Plate Assembly	QXHK0026	1			★
C	M18-1	Lock Lever Plate Spring	QBT1487M	1			RQ-237S
C	M19	Stop Ring E5 ϕ	XUC5FK	2			COMMON
C	M20	Fast Forward Lever-1 Assembly	QXLK0108	1			★
B	M20-1	Push Button-F	QBJ2079	5			★
C	M21	Stop Ring E6 ϕ	XUC6FK	1			COMMON
C	M22	Eject Lever-1 Assembly	QXLK0105	1			★
B	M22-1	Eject Button-D	QBJ3252	1			★


Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
C	M23	Stop Lever Assembly	QXLK0107	1			★
C	M24	Playback Lever Assembly	QXLK0106	1			★
B	M25	Steel Ball 2.5φ	QDK1012	3			RQ-237S, RS-281S
C	M26	Rewind Lever Assembly	QXLK0109	1			★
C	M27	Fast Forward Lever	QML2118	1			RQ-237S, RS-281S
C	M28	Record Lever-1 Assembly	QXLK0110	1			★
C	M29	Fiber Washer 6.2×11×1t	QBK7130	1			RQ-237S, RS-281S
C	M30	Record Lever-3 Unit	QXLK0111	1			★
C	M31	Cassette Pressure Lever	QBJ1683A	1			RQ-237S
C	M32	Cassette Pressure Spring	QBP1302	1			”
C	M33	Brake Spring	QBN1154	1			RQ-237S, RS-281S
C	M34	Erase Safety Lever	QBJ1787	1			”
B	M35	Brake	QBJ1654	1			RQ-237S, RS-281S
C	M35A	Brake Guide	QMG0004	1			”
C	M36	Snap Washer	QWQ1124	3			”
A	M37	Supply Reel Table Assembly	QXPK0022	1			”
A	M38	Counter Belt	QDB0142	1			RQ-237S
A	M39	Takeup Reel Table Assembly	QXP0319	1			RQ-237S, RS-281S
C	M40	Stop Ring E2.5φ	XUC25FK	1			COMMON
C	M41	Auto Stop Driving Pawl Spring	QBTk0014	1			RQ-2091S, 409S
B	M42	Auto Stop Driving Pawl	QBJ1656	1			RQ-237S, RS-281S
B	M43	Idler Lever Assembly	QXL0441	1			”
C	M43-1	Idler Lever Spring	QBTk0013	1			RQ-2091S, 409S
C	M44	Nylon Washer	QBJ3224	2			RQ-237S, RS-281S
C	M45	Detecting Lever Spring	QBN1156	1			RQ-237S
B	M46	Detecting Piece	QBJ1538	1			RQ-237S, RS-281S
C	M47	Auto Stop Detecting Lever Unit	QXLK0093	1			★
C	M48	Screw ⊕2×12	XSN2+12	1			COMMON
C	M49	Screw ⊕2×10	XSN2+10	3			”




Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
C	M50	Pressure Roller Lever Assembly	QXL0450	1			RQ-237S, RS-281S
C	M51	Head Table	QBJ1662	1			RQ-237S
C	M52	Nylon Washer	QBJK0015	1			RQ-231S, 3001S
C	M53	Head Spring	QBC1103	1			RQ-237S, RS-281S
C	M54	Pressure Roller Lever Spring	QBN1157	1			"
C	M55	Screw \oplus M2.6 \times 10	XSN26+10	1			COMMON
x	M56	Head Base Plate Unit	QXKK0052	1			★
A	M57	Tape Counter	QDC0044	1			RQ-237S
x	M58	Upper Base Assembly	QXKK0054	1			★
C	M58-1	Eject Lever Spring	QBT1490	1			RQ-237S, RS-281S
C	M59	Eject Lever-2	QML2330	1			★
C	M60	Auto Stop Drive Lever Unit	QXLK0091	1			★
		<u>RESISTORS</u>					
B	R1	Carbon Resistor 680 Ω 1/4 W	ERD14TJ681	1			
B	R2, 46, 48	" 15 Ω 1/4 W	ERD14TJ150	3			
B	R3	" 5.6 Ω 1/4 W	ERD14TJ5R6	1			
B	R4, 33	" 10 K Ω 1/4 W	ERD14TJ103	2			
B	R5	" 100 Ω 1/4 W	ERD14TJ101	1			
B	R6, 45	Carbon Resistor 180 Ω 1/4 W	ERD14TJ181	2			
B	R7	" 8.2 K Ω 1/4 W	ERD14TJ822	1			
B	R8	" 150 Ω 1/4 W	ERD14TJ151	1			
B	R9, 19, 41	" 3.3 K Ω 1/4 W	ERD14TJ332	3			
B	R10, 64	" 330 Ω 1/4 W	ERD14TJ331	2			
B	R11, 66	Carbon Resistor 12 K Ω 1/4 W	ERD14TJ123	2			
B	R12	" 1.5 K Ω 1/4 W	ERD14TJ152	1			
B	R13, 24	" 4.7 K Ω 1/4 W	ERD14TJ472	2			
B	R14, 23	" 100 K Ω 1/4 W	ERD14TJ104	2			
B	R15, 16	" 820 Ω 1/4 W	ERD14TJ821	2			
B	R17	Carbon Resistor 560 Ω 1/4 W	ERD14VJ561	1			







Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
B	R18	Carbon Resistor 100 K Ω 1/4 W	ERD14VJ104	1			
B	R20, 40	" 18 K Ω 1/4 W	ERD14TJ183	2			
B	R21	" 6.8 K Ω 1/4 W	ERD14TJ682	1			
B	R22, 28	" 2.2 K Ω 1/4 W	ERD14TJ222	2			
B	R25,30,35,52	Carbon Resistor 2.7 K Ω 1/4 W	ERD14TJ272	4			
B	R26	" 33 K Ω 1/4 W	ERD14TJ333	1			
B	R27, 47	" 220 Ω 1/4 W	ERD14TJ221	2			
B	R29	" 3.9 K Ω 1/4 W	ERD14TJ271	1			
B	R31,36,39,58	" 1 K Ω 1/4 W	ERD14TJ102	4			
B	R32	Carbon Resistor 27 K Ω 1/4 W	ERD14TJ273	1			
B	R34, 43	" 47 Ω 1/4 W	ERD14TJ470	2			
B	R37	" 56 Ω 1/4 W	ERD14TJ560	1			
B	R38	" 47 K Ω 1/4 W	ERD14VJ473	1			
B	R42	" 390 Ω 1/4 W	ERD14TJ391	1			
B	R44	Carbon Resistor 270 Ω 1/4 W	ERD14TJ271	1			
B	R49	" 33 Ω 1/4 W	ERD14TJ330	1			
B	R50, 51	Wire-wound Resistor 0.47 Ω 1/2 W	ERM12PKR47	2			
B	R54, 56, 57	Solid Resistor 10 Ω 1/2 W	ERC12GM100	3			
B	R55	" 22 Ω 1/2 W	ERC12GM220	1			
B	R59	Carbon Resistor 25 K Ω 1/4 W	ERD14TJ253	1			
B	R60	Solid Resistor 15 Ω 1/2 W	ERC12GM150	1			
B	R61	Carbon Resistor 4.7 Ω 1/4 W	ERD14TJ4R7	1			
B	R62	" 22 K Ω 1/4 W	ERD14TJ223	1			
B	R63	" 1.2 K Ω 1/4 W	ERD14VJ122	1			
B	R65	Carbon Resistor 220 Ω 1/4 W	ERD14VJ221	1			
		<u>VARIABLE RESISTORS</u>					
A	VR1	Variable Resistor 5 K Ω (A)	EVHPOAL30A53	1			★
A	VR2	" 10 K Ω (A)	EVHPOAL30A14	1			★
A	VR3	Semi-fixed Variable Resistor 50 K Ω (B)	EVLS3AA00B54	1			★

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
		<u>CAPACITORS</u>					
C	C1	Mica Capacitor	22 pF	ECMS05220KH	1		
C	C4, 29	"	10 pF	ECMS05100KH	2		
C	C6, 18, 21	"	12 pF	ECMS05120KH	3		
C	C7, 27	Styrol Capacitor	330 pF	ECQS1331JZ	2		
C	C8, 14	Ceramic Capacitor	0.01 μ F	ECKE1H103MD	2		
C	C12	Ceramic Capacitor	10 pF	ECCD1H100FC	1		
B	C13,40,56,60	Electrolytic Capacitor	100 μ F	ECEA6V100L	4		
C	C17	Styrol Capacitor	360 pF	ECQS1361JZ	1		
C	C20	"	1200 pF	ECQS1122KZ	1		
C	C23	"	3300 pF	ECQS1332KZ	1		
C	C24	Mica Capacitor	18 pF	ECMS05180K	1		
C	C26, 28	Ceramic Capacitor	0.0047 μ F	ECKE1H472MD	2		
C	C31	Styrol Capacitor	1500 pF	ECQS1152KZ	1		
C	C32	Mylar Capacitor	0.01 μ F	ECQM05103MZ	1		
C	C33	"	0.033 μ F	ECQM05333MZ	1		
B	C34	Electrolytic Capacitor	4.7 μ F	ECEA25V4R7L	1		
C	C35, 39, 46	Mylar Capacitor	0.022 μ F	ECQM05223MZ	3		
C	C36	Ceramic Capacitor	0.033 μ F	ECKE1H333P	1		
B	C37,50,65,80	Electrolytic Capacitor	10 μ F	ECEA16V10L	4		
C	C38	Ceramic Capacitor	330 pF	ECCD1H331K9	1		
B	C41,45,52,55	Electrolytic Capacitor	3.3 μ F	ECEA25V3R3L	4		
B	C42	"	0.47 μ F	ECEA50VR47LM	1		
C	C43, 66, 79	Mylar Capacitor	0.0033 μ F	ECQM05332MZ	3		
C	C44, 47	"	0.001 μ F	ECQM05102MZ	2		
C	C48, 76	Mylar Capacitor	0.0022 μ F	ECQM05222MZ	2		
B	C49, 51, 53	Electrolytic Capacitor	33 μ F	ECEA6V33L	3		
B	C54	"	220 μ F	ECEA6V220L	1		
C	C57, 69	Mylar Capacitor	0.1 μ F	ECQM05104MZ	2		

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
B	C58	Electrolytic Capacitor 1 μ F	ECEA50V1L	1			
C	C59	Mylar Capacitor 0.15 μ F	ECQM05154MZ	1			
B	C61,62,64,70, 77	Electrolytic Capacitor 470 μ F	ECEA10V470L	5			
C	C63	Mylar Capacitor 0.0068 μ F	ECQM05682MZ	1			
C	C67	Styrol Capacitor 390 pF	ECQS1391KZ	1			
C	C68	Mylar Capacitor 0.018 μ F	ECQM05183MZ	1			
B	C71	Electrolytic Capacitor 330 μ F	ECEA10V330L	1			
B	C72, 78	Electrolytic Capacitor 1000 μ F	ECEA16V1000L	2			
C	C73, 74	Ceramic Capacitor 0.01 μ F	ECKE1H103P	2			
B	C75	Electrolytic Capacitor 100 μ F	ECEA10V100L	1			
C	C76	Mylar Capacitor 0.0022 μ F	ECQM05222MZ	1			
		<u>VARIABLE CAPACITORS</u>					
B	C3,5,9,10,19, 22,25,30	Trimmer Capacitor (M,T)	PVC2T16M	4			★
B	C11, 15	Variable Capacitor	PVC2RL	1			★
B	C16	”	ECV1YW02D58A	1			RQ-235S
		<u>TRANSISTORS</u>					
A	Tr1, 2, 3	Transistor	2SC920(R)	3			COMMON
A	Tr4	”	2SB346	1			”
A	Tr5, 6, 7	”	2SB175(B)	3			”
A	Tr8, 9, 10	”	2SB324	3			”
A	Tr11	”	2SC828(R)	1			RS-270JS,275US 715JS,740US
		<u>DIODES & RECTIFIER</u>					
A	D1, 2, 5	Diode	OA90	3			COMMON
A	D3	Variatite	EYV320D1R2J3	1			RQ-238HS
A	D4, 6	Diode	1S1211	2			RQ-235S, 237S
A	D7	Rectifier	10DC1R	1			RS-262JS,275US 276JS
		<u>THERMISTORS</u>					
B	TH1, 2	Thermistor	QVM300A	2			COMMON

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
		<u>TRANSFORMERS & COILS</u>					
A	T1	1st IFT	RLI2B124M	1			★
A	T2	2nd IFT	RLI2B157M	1			★
A	T3	3rd IFT	RLI2B450M	1			RQ-238FHS
A	T4	Input Transformer	QLA0123	1			RQ-235S
A	T5	Power Transformer	QLP0626	1			★
A	L1, 2	Bar Antenna Coil (MW, SW1)	ELR18B5130	1			★
A	L3	Antenna Coil (SW2)	RLA3B19M	1			★
A	L4	Antenna Coil (SW3)	RLA3B20M	1			★
A	L5	Choke Coil	RLQY75S5	1			RQ-237S
A	L6	Oscillator Coil (MW)	RLO2B73M	1			★
A	L7	Oscillator Coil (SW1)	RLO3B36M	1			★
A	L8	Oscillator Coil (SW2)	RLO3B37M	1			★
A	L9	Oscillator Coil (SW3)	RLO3B38M	1			★
A	L10	Bias Trap Coil	ELM10S122	1			RS-253S, 267S, 281S
A	L11	Bias Oscillator Coil	QLB0145	1			RQ-237S, RS-267S, 281S
A	L12	Choke Transformer	QLP0105	1			COMMON
		<u>SWITCHES</u>					
A	S1	Rotary Switch	QSR0018	1			★
A	S2	Slide Switch (Record/Playback)	ESD1239AS	1			★ 
A	S3	Slide Switch (Tape/Radio/Sleep)	QSS1157	1			★
A	S4	Slide Switch (AGC)	QSS1160	1			★
A	S5	Slide Switch (Monitor)	QSS1129	1			FQ-237S
A	S6	Leaf Switch (Stop)	QSB0170A	1			FQ-237S
A	S7	Pilot Lamp Switch	QYT0143	1			FQ-235S
	S8	AC/DC Select Switch (Interlocked with AC socket)	(Refer to E16)	(1)			
A	S9	Rotary Switch (Voltage Select)	QSR0005B	1			COMMON

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
		<u>ELECTRICAL PARTS</u>					
A	E1	Record Playback Head	QWY0107Z	1			RQ-221S, 237S, 238FHS
A	E2	Erase Head	QWY2107X	1			RQ-238FHS
A	E3	Level Meter	QSL0061	1			RQ-235S
A	E4	Pilot Lamp	XAM30TW	2			COMMON
B	E5	Pilot Lamp Socket	QJS0121	2			RS-281S, 282S
B	E6	Dial Indicator	QKT1390	1			RQ-235S
B	E7	Indicator (Volume, Tone)	QKT1709	2			★
A	E8	Built in Microphone	WM066XB	1			★
B	E9	Microphone Cover	QBJ2078	1			★
C	E10	Heat Sink	QTH1049S	2			RQ-208S 
B	E11	DC IN Jack	QJA0128	1			RQ-237S
B	E12	M3 Jack	QJA0125	2			"
B	E13	M3 Jack with SW	QJA0127	1			"
B	E14	M2 Jack	QJA0126	1			"
C	E15	Jack Board	QGJ1213	1			★
B	E16	AC Socket with S8	QJS0316S	1			RQ-238FHS 
A	E17	Tuning Knob-A	QGT1118	1			RQ-235S
A	E18	Fine Tuning Knob	QGT1119	1			"
C	E19	Tuning Assistant Shaft	QMS2288	1			★
C	E20	Tuning Shaft	QMS2287	1			★
C	E21	Gear-A	QMQ1144	1			★
C	E22	Gear-B	QMQ1145	1			★
C	E23	Dial Drum	QBJ2073	1			★
C	E24	Band Selector Shaft	QMS2203	1			★
C	E25	Gear-C	QBJ2074	2			★
C	E26	Dial Spring	QBT1531	1			RQ-237S
C	E27	Pole	QMP1384S	1			★ 
C	E28	Spring	QBT1613	1			★

Rank	Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
C	E29	Indicator Lifter	QDG1021	2			★
C	E30	Gear	QDG1022	2			★
C	E31	Dial Pulley Unit-A	QXA0172	1			★
C	E32	Dial Pulley Unit-B	QXA0173	1			★
A	E33	Speaker	EAS10P75SB	1			RQ-237S
C	E34	Band Indicator	QYT0269	1			★
		<u>CABINET PARTS</u>					
B	G1	Main Case Assembly (Without Speaker & MIC)	QYM0096SW	1			★ 
B	G1-1	Cassette Case Assembly	QYA0164	1			★
C	G1-2	Cassette Case Angle Unit	QXA0179	2			★
C	G1-3	Cassette Case Holding Metal	QKT1498	1			RQ-237S, 238FHS
C	G1-4	Cassette Case Spring-A	QBN1280	1			RQ-437S
C	G1-5	Cassette Case Spring-B	QBN1241	1			RQ-437S
C	G1-6	Tapping Screw $\oplus 3 \times 8$	XTV3+8B	8			COMMON
C	G1-7	Tapping Screw $\oplus 3 \times 6$	XTN3+6B	4			”
B	G2	Bottom Case Assembly	QYC0150S	1			★ 
C	G2-1	Handle Assembly	QYH0025S	1			RQ-235S 
C	G2-2	Handle Holding Metal	QKT1375	2			RQ-235S
B	G2-3	Rod Antenna	XEARDV132KAS	1			” 
C	G2-4	Rod Antenna Holder	QKT1374	1			”
C	G2-5	Battery Terminal \oplus	QJB0042	2			”
C	G2-6	Battery Spring \ominus	QJB0016	2			”
C	G2-7	Screw $\oplus 3 \times 10$	XYN3+C10S	1			COMMON 
A	G2-8	Neon Lamp	XAN3K	1			”
B	G3	Battery Cover	QYF0066	1			RQ-235S
A	G4	Band Selector Knob	QYT0142	1			”
A	G5	Volume Knob	QGT1116	2			”
A	G6	Select Knob	QGT1160	1			★
C	G7	Pole	QMP1379S	3			RQ-235S 

RECOMMENDED STOCK OF REPLACEMENT PARTS

Rank of Part	Estimated Selling Q'ty of Tape Recorder Set					
	Less than 50	100	300	500	1,000	2,000
A rank Parts	2	5	15	20	40	80
B rank Parts	1	2	5	10	20	40
C rank Parts	0	1	3	5	10	20